characterized in that a drive mechanism for moving said heat shielding element is

equipped for changing an in-crystal temperature gradient in a pulling axis direction of the

silicon crystal ingot and for adjusting a ratio V/G of a pulling speed V in the Czochralski

method to an average value G of the in-crystal temperature gradient in a pulling axis

direction within a temperature range from the silicon melting point to 1350°C to be

within a range of 0.16 to 0.18 mm^2/°C min. and a ratio G outer/G center is 1.10 or less,

where G outer and G center are the temperature at the crystal outer surface and the

temperature at the crystal center respectively.

9.   A heat treating method for a silicon single crystal wafer related to a

perfect crystal produced by a Czochralski method, characterized in that a heat treatment

temperature at the initial entry of the silicon single crystal wafer to be a target of the heat

treatment is 500° C or less, and a temperature ramping rate in a temperature range from

the heat treatment temperature at initial entry to an ultimate temperature set in a range of

700°C - 900°C is set to 1°C/min or less.

10.   A heat treating method for a silicon single crystal wafer related to a

perfect crystal produced by a Czochralski method, characterized in that a heat treatment

temperature at the initial entry of the silicon single crystal wafer to be a target of the heat

treatment is 500°C or less, and a temperature ramping rate in a temperature range from

the heat treatment temperature at initial entry to an ultimate temperature set in a range of

700°C - 900°C is set to 1°C/min or less, so as to make uniform the distribution of an

oxide precipitate density of the silicon single crystal wafer after heat treatment

11.   A heat treating method for a silicon single crystal wafer related to a

perfect crystal produced by a Czochralski method, characterized in that a heat treatment

temperature at the initial entry of the silicon single crystal wafer to be a target of the heat

treatment and a temperature ramping rate from the heat treatment temperature at initial

entry to an ultimate temperature set in a range of 700°C - 900°C are adjusted so as to

adjust the distribution of an oxide precipitate density of the silicon single crystal wafer

after heat treatment.

REMARKS

In the above-identified Office Action the Examiner has rejected claims 5, 9-11, 16

and 23 under 35 U.S.C. § 112. The Examiner has stated that the definition of "perfect"

crystal in the application is unclear as to whether all or just the stated defects are

removed. Applicants disagree with this interpretation noting that on page 23, line 16-19,

"perfect" crystal is explicitly defined as "a single crystal ingot free from grown in defects

(defects in the crystal which are normally generated during growth of a silicon single

crystal and a general C/Z method such as OSF Ring, Void Defect and Dislocation

Cluster)". Applicants believe that this definition of "perfect" crystal is clear and distinct

and therefore Applicants are entitled to use the term in the claims.

Claims 9-11 have been rejected under 35 U.S.C. § 112 as indefinite. The

Examiner has pointed out the use of quotes which is not permissible. Applicants have

removed the quotes from 9-11 and as such believes the claims now to be definite.

Claim 8 has been rejected as anticipated by the patent to Kim. Claims 14 and 17

have been rejected as anticipated by Wijaranakula. Claims 14, 17 and 22 have been